REMARKS

Claims 1-4 and 6-12 are now in this application, and are presented for the Examiner's consideration.

Claim Objections

Claims 1-12 were objected to because of various informalities.

Specifically, it was stated that the word "reproducing" as to the combined distribution of light intensities, should be changed to another word such as "generating", "creating", "combining", "producing", etc.

In this regard, the word "reproducing" in the claims has been changed to "generating," and the word "reproduction" has been changed to "generation."

Accordingly, it is respectfully submitted that the objection to the claims has been overcome.

Prior Art Rejections

Claims 1-5, 11 and 12 were rejected under 35 U.S.C. §103(a) as being obvious from the admitted prior art in the application in view of the Knoll et al article, entitled "Improving Spectroscopic Techniques by a Scanning Multi-channel Method."

The Examiner admits that the admitted prior art fails to disclose:

(1) a drive for reciprocating the light intensity measuring arrangement within a predetermined range to at least two different positions;

(2) a stop for limiting a reciprocating movement of the light intensity measuring arrangement; and

(3) the signal-processing unit reproducing a combined distribution of light intensities measured by the light intensity measuring arrangement of the spectrometer head at each of the two different positions.

For this reason, Knoll et al was cited.

The method according to Knoll et al is, as shown in enclosed Figs. A1 through A3, directed to dividing a total detection region into a plurality of measurement parts and detecting the light intensity distribution by moving the multichannel detector through the total detection region. As configured, all data of the light intensity through the total detection region is combined by the desired accumulation. The accumulation is controlled by a driving distance per detection of light intensity distribution.

In accordance with the Knoll et al, the pixel size of the multichannel detector should be decreased so as to acquire high resolution. Also, the driving distance should be short so as to acquire high resolution. Accordingly, the detection of the total

detection region can be accomplished by taking a relatively long time and a lot of driving movement.

In addition, the method according to Knoll et al requires sensors which estimate the accurate location of the multichannel detector so as to substantially acquire the light intensity distribution. The sensors estimate the accurate position of the multichannel detector and transfer the position to a controller which controls the detection timing. Generally, sensors have different delay times such that the light intensity distribution can be calculated with errors by the difference of the location control.

Further, Knoll et al is limited to decreasing the pixel size of the multichannel detector, so the invention of Knoll et al may have a limit for enhancing the precise estimation of the light intensity distribution.

On the other hand, the present invention is directed to a spectrophotometer in which a plurality of photodiodes are arranged in a row throughout the detection region so as to detect a light intensity distribution. The present invention drives a multichannel detector to estimate a light distribution as in Knoll et al.

However, the present invention does not measure the light intensity distribution in the detection region by continuously driving the multichannel detector toward one direction. The

present invention comprises a first intensity measurement step, and a second intensity measurement step after moving the photo diode array to a desired position.

The present invention can measure the light intensity distribution of the total measurement region only by this double measurement at two discrete positions. The number of driving adjustments of the multichannel detector may also be changed to be greater than two, but this is still smaller than with Knoll et al. Thus, the present invention has a lower driving time than Knoll et al.

Accordingly, the present invention can measure the light intensity distribution of the total measurement region more quickly than Knoll et al.

In addition, the present invention does not require any sensors to precisely detect the location of the multichannel detector. The present invention can accumulate the data of the first measurement and that of the second measurement. The desired position of the second measurement step can be changed by controlling the position of a stopper according to the pixel size of the multichannel detector. Accordingly, the present invention can measure the light intensity distribution merely by adjusting the position of the stopper before the measurement, without the use of any sensors.

Consequently, the feature of the present invention is different from that of Knoll et al which provides a measurement method of the total measurement region, the requirement of the sensors for the location detection, the measurement time and the driving time. Therefore, the present invention is not rendered obvious from Knoll et al.

In order to more clearly distinguish the present claimed invention from Knoll et al, and the admitted prior art in combination with Knoll et al, claim 1 has first been amended to add the limitations of claim 5 thereto, which recite "said light intensity measuring arrangement having a photodiode array with a plurality of photodiodes linearly arranged on a longitudinal mount at regular physical intervals." Claim 5 has thus been canceled.

More importantly, claim 1 has been amended to change the language of "a drive for reciprocating the light intensity measuring arrangement within a predetermined range to at least two different positions" to "a drive for reciprocating the light intensity measuring arrangement a distance equal to a physical interval between photodiodes of said photo diode array to at least two different discrete positions." Therefore, the present invention is limited to a drive for reciprocating the light intensity measuring arrangement within a physical interval between photodiodes of the photodiode array.

This is very different from the continuous drive of Knoll et al.

Further, claim 11 includes similar language of a first intensity measurement step of measuring light intensities of the incident optical spectra by the photodiode array at a first position; a step of moving the photodiode array using a drive by a distance equal to a physical interval between photodiodes of said photodiode array to a second discrete position; repeating the steps of light transmitting, light diffraction and a light reflection; and a second intensity measurement step of measuring light intensities of the incident optical spectra by the photodiode array corresponding to said intervals at the second position.

Thus, claim 11, as with claim 1, provides at least one discrete movement by an amount equal to a physical interval between photodiodes of the photodiode array.

Claim 12 further defines at least one of the two different positions to be defined by the light intensity measuring arrangement against the stop. There are sensors in Knoll et al, and there is no stop.

Thus, even if the admitted prior art and Knoll et al are combined, the movement of the light intensity measuring arrangement a discrete distance equal to a physical interval between photodiodes of the photodiode array to at least two

different positions, still would not be disclosed or even remotely suggested thereby.

Accordingly, it is respectfully submitted that the rejection of claims 1-5, 11 and 12 under 35 U.S.C. §103(a) has been overcome.

Claims 6-8 and 10 were rejected under 35 U.S.C. §103(a) as being obvious from the admitted prior art in view of the Knoll et al article, as applied above, and further in view of U.S. Patent No. 5,861,954 to Israelachvili.

The remarks made above in regard to the admitted prior art and Knoll et al are incorporated herein.

Israelachvili, however, merely provides a teaching of different drive means. Israelachvili is provided for measuring surface forces, and is therefore very different from the admitted prior art and the present claimed invention. Therefore, Israelachvili fails to cure any of the deficiencies of the admitted prior art and Knoll et al, as discussed above.

Accordingly, for the same reasons given above in regard to the combination of Applicant's admitted prior art in view of Knoll et al, as to the rejection of claims 1 and 11, the same arguments apply to this rejection.

Accordingly, it is respectfully submitted that the rejection of claims 6-8 and 10 under 35 U.S.C. §103(a) has been overcome.

Claim 9 was rejected under 35 U.S.C. §103(a) as being obvious from the admitted prior art in view of the Knoll et al article, as applied above, and further in view of Israelachvili and still further in view of U.S. Patent No. 3,889,166 to Scurlock.

The remarks made above in regard to Applicant's admitted prior art in view of Knoll et al and Israelachvili are incorporated herein by reference.

Scurlock merely discloses an automatic frequency control for a sandwich transducer using voltage feedback. Therefore, Scurlock fails to cure the aforementioned deficiencies of the combination of the admitted prior art and Knoll et al, as discussed above.

Further, the displacement of amplifier of the present invention is a device amplifying the displacement not by an electrical circuit, but by a mechanical structure. Typically, it may be a lever. Therefore, the electrical amplifier 44 of Scurlock is quite different from the displacement of the amplifier of the present invention.

Accordingly, it is respectfully submitted that the rejection of claim 9 under 35 U.S.C. §103(a) has been overcome.

Should the Examiner disagree with any of the above comments, he is requested to specifically show where in the reference or references there is support for a contrary view.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

In the event that this Paper is late filed, and the necessary petition for extension of time is not filed concurrently herewith, please consider this as a Petition for the requisite extension of time, and to the extent not tendered by check attached hereto, authorization to charge the extension fee, or any other fee required in connection with this Paper, to Account No. 07-1524.

The Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 07-1524.

In view of the foregoing amendments and remarks, it is respectfully submitted that Claims 1-4 and 6-12 are all

allowable, and early and favorable consideration thereof is solicited.

Respectfully submitted,

Richard M. Goldberg

Richard M. Goldberg
Attorney for Applicant
Registration No. 28,215

25 East Salem Street
Suite 419
Hackensack, New Jersey 07601
TEL (201) 343-7775
FAX (201) 488-3884

Enclosure:
Figs. A1-A3 (one sheet)

Figures

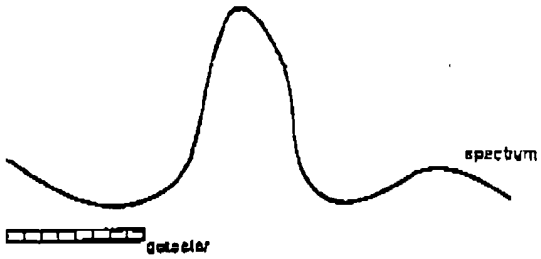

Fig.A1

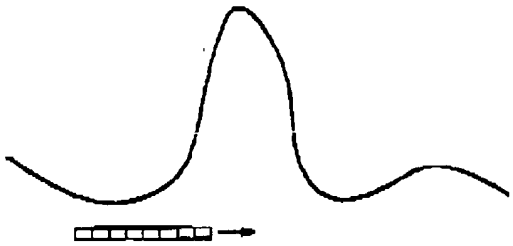

Fig.A2

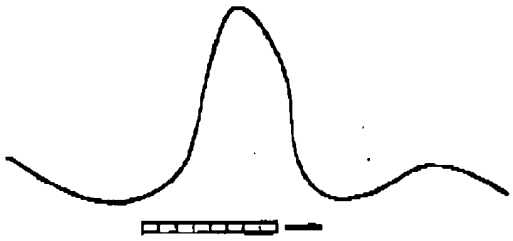

Fig.A3

APPLICANT : Soo Hyun KIM
SERIAL NO.: 09/832,551
FILED : APRIL 11, 2001
FOR : SPECTROPHOTOMETER WITH DRIVE MEANS AND SPECTROPHOTOMETRY USING SUCH
ART UNIT : 2872
EXAMINER : Craig CURTIS